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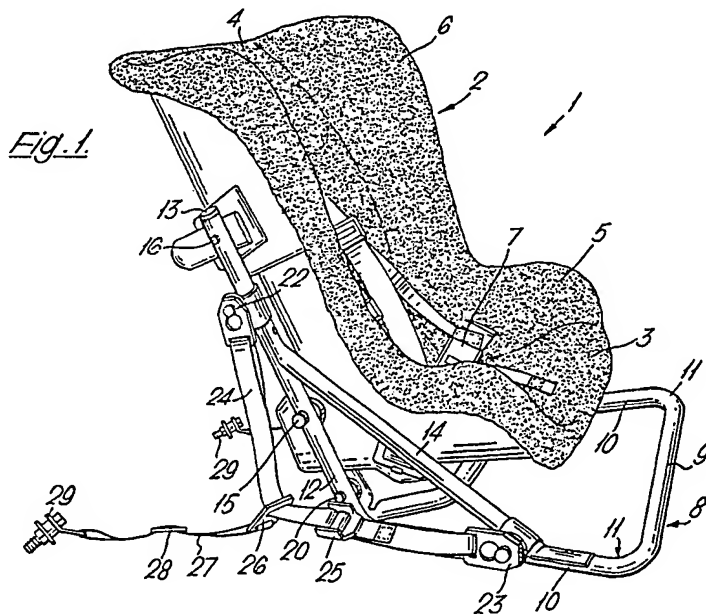
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None

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(54) Improvements in or relating to a child's safety seat

(57) A child's safety seat for use in a motor car consists of a shell defining a seat and a back, and strap means for retaining a child in a sitting position within the shell. The shell is mounted on the frame and there are strap means on each side of the frame to retain the frame in position on a seat in a motor vehicle. Each strap consists of a first strap portion 27 adapted to be connected to an anchoring point 29 located behind and beneath the frame and two further strap portions 24, 25 connecting the first strap portion to upper and lower anchoring points 22, 23 on the frame.



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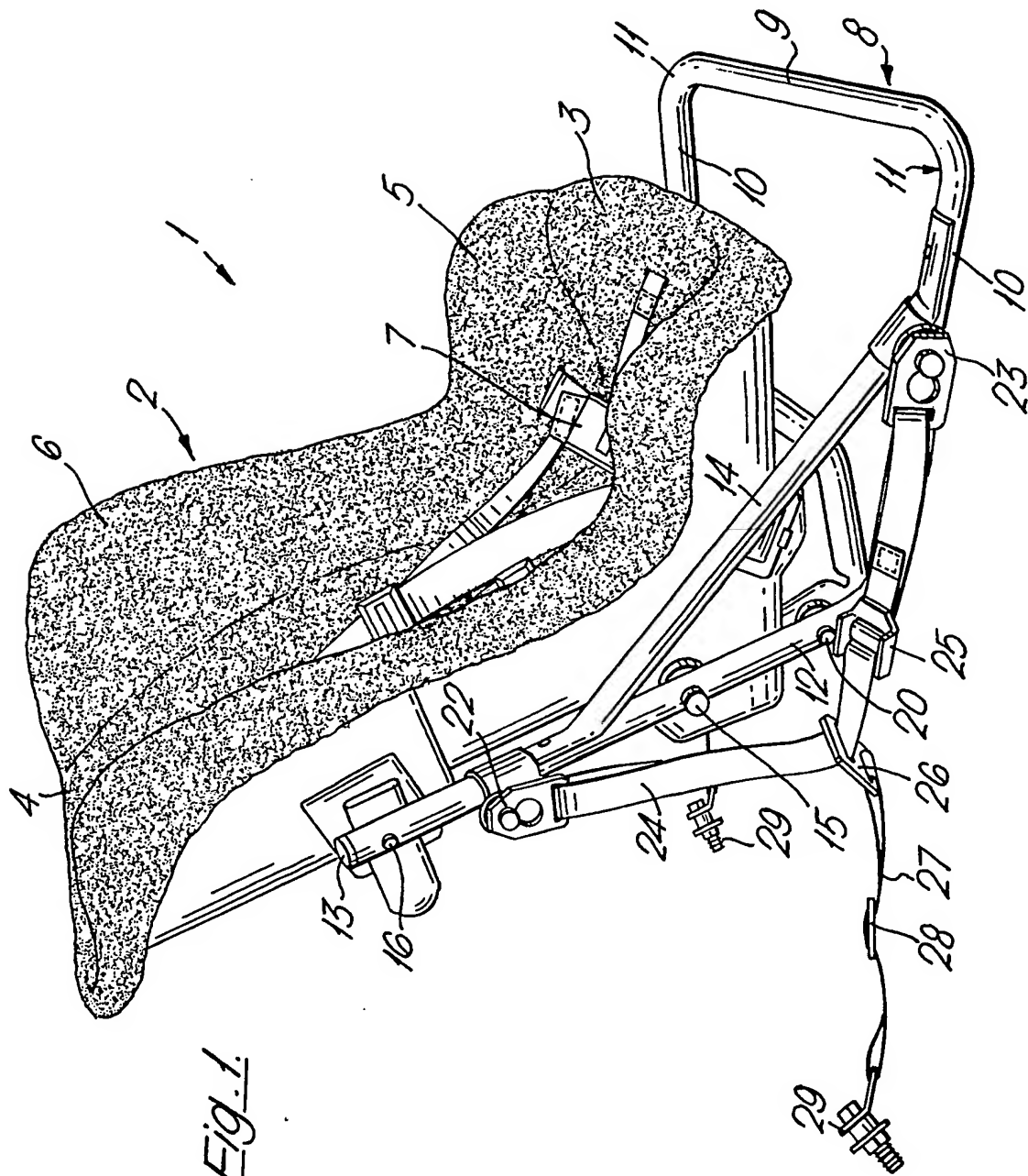


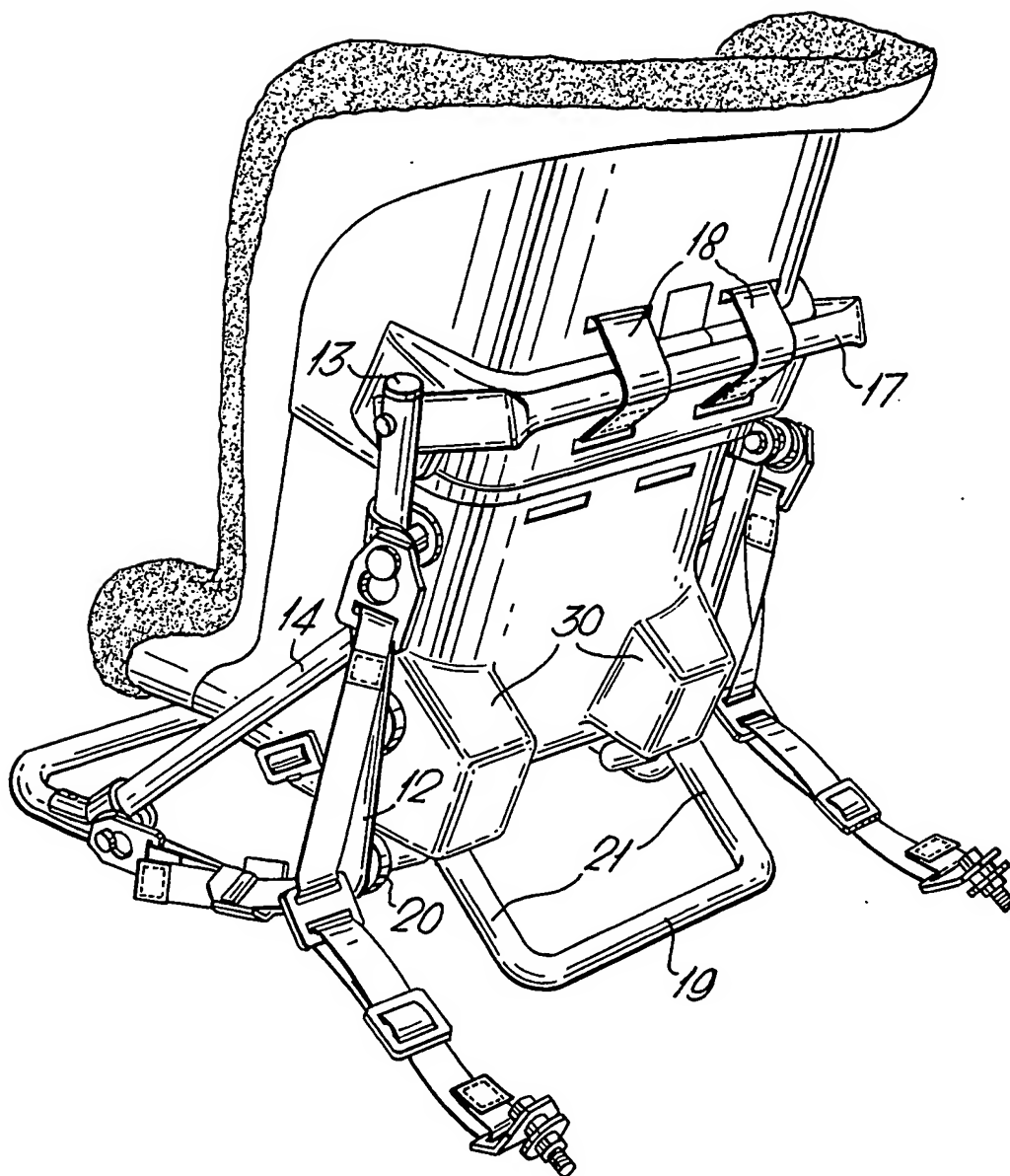
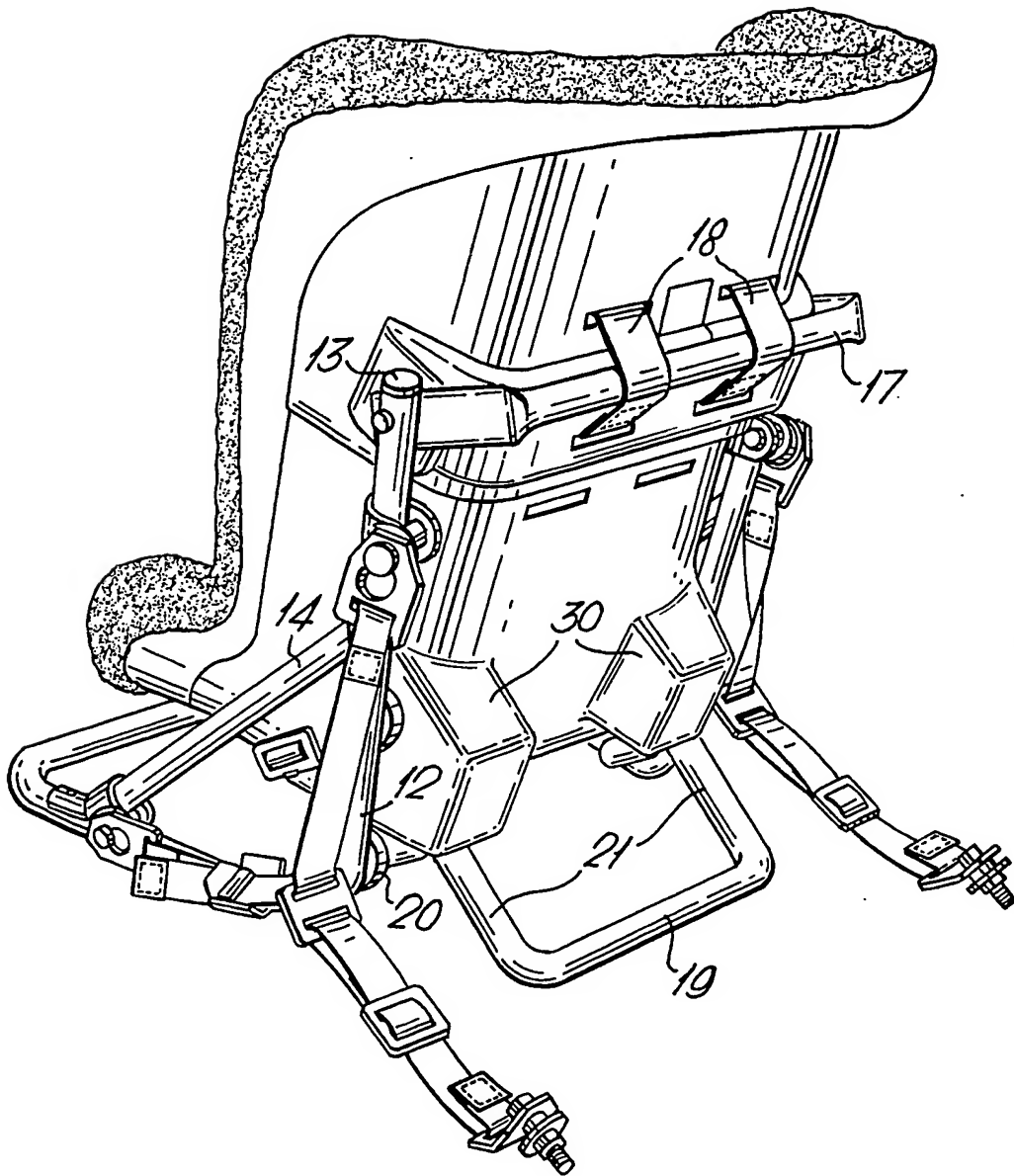
Fig. 2.

Fig. 2.

SPECIFICATION

Improvements in or relating to a child's safety seat

5 The present invention relates to a child's safety seat, and more particularly to a child's safety seat of the type intended for use on a seat of a motor vehicle such as a motor car.

10 It has been proposed to provide a safety seat to be mounted on the rear seat of a motor vehicle such as a motor car, which safety seat is mounted on a substantially rigid frame, the frame being retained in position in the motor vehicle by means of a strap arrangement. In the mentioned prior-proposed device a single strap is provided on each side of the frame which extends from an appropriate point on the frame angularly downwardly to an anchor point provided underneath the rearmost part of the seat squab. One disadvantage with such a prior proposed arrangement is that, even when the straps are tightened the frame, with the seat may still move in a front-to-back direction and/or in an up-and-down direction if subjected to the appropriate forces.

15 The present invention seeks to provide a child's safety seat in which this disadvantage is obviated or reduced.

20 According to this invention there is provided a child's safety seat for use in a motor vehicle, said child's safety seat comprising a shell or the like defining a seat and a back, strap means for retaining a child in a sitting position within the shell, and a frame on which the shell is mounted, there being strap means provided on each side of the frame to retain the frame in position on a seat in a motor vehicle, each said strap means comprising a first strap portion adapted to be connected to an anchoring point located behind and beneath the frame, and two further strap portions connecting said first strap portion to upper and lower anchoring points respectively provided on the frame.

30 Preferably said frame comprises a base portion adapted to be located on the seat squab of a motor vehicle and a portion extending substantially upwardly from the rear of said horizontal portion, the anchoring points being located on the horizontal portion and on the upwardly extending portion. Conveniently the frame has a cross bar member located forwardly of and underneath the forwardmost edge of the seat.

40 Preferably the frame incorporates a pivotally movable support member movable from a position in which the support member will support the frame in steady condition on a horizontal surface, to a retracted position.

50 Advantageously said two further strap portions are formed by a single strap of adjustable length that is mounted on the two anchor points.

55 Preferably said first and further strap portions are of adjustable length.

60 Advantageously said two further strap portions are substantially at least 90° to each other.

65 In order that the invention may be more readily understood, and so that further features thereof may be appreciated, the invention will now be described by way of example, with reference to the accom-

panying drawings in which:

Figure 1 is a perspective view from the front and one side of a seat in accordance with the invention in the position that it will adopt when mounted in a motor vehicle; and

Figure 2 is a rear perspective view of the seat shown in *Figure 1* in a slightly different condition.

70 Referring initially to *Figure 1* a child's safety seat arrangement 1 comprises a substantially rigid shell 2 that defines a seat portion 3 on which a child can sit and a back portion 4. Arm rests 5 and wing portions 6 that extend forwardly adjacent the head of a child sitting on the seat are integrally moulded with the seat shell 2. A shoulder and lap strap arrangement 7 is provided which is anchored directly to the seat shell. The seat shell may be covered with a cushioning material and an appropriate outer cover which may be of a soft or furry material. Such a seat shell arrangement has been proposed previously.

80 The seat shell 2 illustrated in *Figure 1* is shown as being mounted on a framework 8. The framework is symmetrical, that is to say one side of the framework is a mirror image of the other side, thus only one side will be described in detail. The framework constitutes a front transverse bar 9 located underneath and forwardly of the front edge of the seat portion 3. Two rearwardly extending rail portions 10, which are connected by integral curved corner regions 11 with the rail portion 9 extend rearwardly and converge slightly. At a point underneath the rear of the seat 3 these rail portions are bent or curved and subsequently extend upwardly as substantially upstanding members 12 which terminate 13 at a position adjacent the wings 6 mentioned above. A diagonal strut reinforcing 14 is provided which extends diagonally from the rail portion 10 to the member 12.

100 A bolt, rivet or the like 15 passes through an aperture provided towards the base of the upstanding member 12 and through a corresponding aperture in the seat shell, and another bolt, rivet or the like 16 passes through an upper aperture formed in the upstanding member 12 and also through a corresponding aperture formed in the seat shell. The upper bolt or rivet 16 also serves to mount in position a transverse bar 17 that effectively interconnects the uppermost ends of the upright portions 12, as can be seen most clearly in *Figure 2*, the bar 17 passing behind the back of the seat shell. Strap portions 18 passing through appropriate apertures in the shell embrace the cross bar 17. Thus the seat is retained in position on the frame by means of two lower bolts or rivets 15, two upper bolts or rivets 16 and the illustrated strap portions 18 which engage the cross bar 17.

110 A support member is provided which is pivotally connected by pivotal connections 20 to the lowermost part of each upstanding member 12. The support member is basically of "U" configuration comprising a transverse cross bar 19 and two forwardly directed arms 21, each forwardly directed arm being cranked, the free ends of the arms 21 being pivotally mounted in position by the pivotal connections 20. The support member may be pivoted to the position as shown in *Figure 2*, and when

in this position it will be appreciated that the chair, on its frame, may be stood in an appropriate position on a flat surface such as a floor or the like, the frame being supported by the cross bar 19 and the front cross bar 9. When the seat and frame are to be mounted in position in a motor vehicle the support member is pivoted downwardly and forwardly to adopt the position illustrated in Figure 1 in which the support member is retracted to a position located under the seat where it does not interfere with the operation of the seat.

Two anchor points 22, 23 are provided on each side of the frame. One anchor point 22 is provided on the upstanding member 12 above the point at which the diagonal bracing member 14 engages the upright member 12 and the other anchor point 23 is located on the horizontal rail portion 10 adjacent the point at which the diagonal bracing member 14 is connected to the rail portion 10. A strap portion 24 is releasably connected, at each end thereof, to the two anchor points. The strap portion 24 is provided with a buckle 25 so that the length thereof may readily be adjusted. A slidable buckle 26 engaged on the strap portion 24 serves to connect another strap portion 27 to the strap portion 24. The strap portion 27 is of adjustable length by virtue of a slider 28 and terminates with an anchor bolt 29.

When the seat in accordance with the present invention is to be mounted in position in a motor vehicle the anchor bolts 29 are connected to the anchor points conventionally provided underneath the back of the seat squab provided in the rear of a motor vehicle. The length of the strap portion 27 and the length of the strap portion 24 are adjusted appropriately so that the straps are tight, and the seat is held in position with the lower frame members 9 and 10 firmly in position on the seat squab, and with the transverse bar 17 in firm engagement with the rear of the seat. Protuberances 30 provided on the seat shell may also be in contact with the rear of the seat.

It will be appreciated that the force maintaining the seat in position in the motor vehicle is transmitted through the strap portion 27, and the force is then effectively split to pass along the two portions of the strap 24 to the upper anchor point 22 and the lower anchor point 23. The two portions of the strap 24 are approximately at 90° to each other, as illustrated. However, the included angle may be greater than this tending in the limit to 180°. It is believed that this particular anchoring arrangement provides the benefits enjoyed by a seat in accordance with the present invention.

It is to be noted that the front transverse bar 9 is located forwardly of the front edge of the seat 3, and thus, when a child is sitting on the seat there is a considerable amount of inertia about the front bar 9 tending to resist any forward tipping or toppling of the seat under emergency conditions.

Whilst the invention has been described with specific reference to one particular embodiment of the invention, it is to be understood that many modifications or improvements may be effected without departing from the scope of the present invention.

CLAIMS

1. A child's safety seat for use in a motor vehicle, said child's safety seat comprising a shell or the like defining a seat and a back, strap means for retaining the child in a sitting position within the shell, and a frame on which the shell is mounted, there being strap means provided on each side of the frame to retain the frame in position on a seat in a motor vehicle, each said strap means comprising a first strap portion adapted to be connected to an anchoring point located behind and beneath the frame, and two further strap portions connecting said first strap portion to upper and lower anchoring points respectively provided on the frame.

2. A child's safety seat according to claim 1 wherein said frame comprises a base portion adapted to be located in the seat squab of a motor vehicle and a portion extending substantially upwardly from the rear of said horizontal portion, the anchoring points being located on the horizontal portion and on the upwardly extending portion.

3. A child's safety seat according to any one of the preceding claims wherein said two further strap portions are formed by a single strap of adjustable length that is mounted on the two anchor points.

4. A child's safety seat according to claim 1, 2, or 3 wherein said first and further strap portions are of adjustable length.

5. A child's safety seat according to any one of claims 1 to 4 wherein said two further strap portions are substantially at least 90° to each other.

6. A child's safety seat according to any one of the preceding claims wherein the frame has a cross bar member located forwardly of and underneath the forwardmost edge of the seat.

7. A child's safety seat according to any of the preceding claims wherein the frame incorporates a pivotally movable support member movable from a position in which the support member will support the frame in a steady condition on a horizontal surface, to a retracted position.

8. A child's safety seat substantially as herein described with reference to and as shown in the accompanying drawings.

9. Any novel feature or combination of features disclosed herein.